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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,498	08/06/2001	Adam Sah	005550.P002	2284

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EXAMINER
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LY, ANH

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 07/09/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/923,498

Applicant(s)

SAH ET AL.

Examiner

Anh Ly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### DETAILED ACTION

1. This Office Action is response to Applicants' Amendment filed on 05/03/2004.
2. Claims 1-54 are pending in this application.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent NO. 5,794,229 issued to French et al. (hereinafter French) in view of US Patent No. 6,115,705 issued to Larson.

With respect to claim 1, French teaches parsing the table data into columns of values (column-wise storage or vertical partitioning: col. 3, lines 45-64, abstract, lines 9-10; also see figs 3A-3C);

formatting each column into a data stream (data page where columns of values or data or records are contained and chain of columns representing a particular database table: abstract, lines 12-13, col. 3, lines 30-36 and lines 65-67 and col. 4, lines 1-7);

and directing a storage device to store each data stream as a continuous strip of compressed data without regard to a page size for the storage device (data stream is in contiguous format and all columns of data are storing on a column basis by cell as a solid stream of data: col. 3, lines 30-47 and col. 4, lines 8-18; also see abstract, lines 12-13, see figs. 4A-4D the boundary of storage is never to reach: col. 13, lines 40-55).

French teaches storing data vertically as by column. Each column is as a continuous data, storing data in column-wise basis. The system includes compression data (see abstract). Date or record of data stream is stored in a database as a persistent storage. French does not explicitly teach continuous strip of data in a temporary storage and permanent storage.

However, Larson teaches non-volatile memory, volatile memory and RAM as temporary storage and permanent storage for data stream (abstract, col. 9, lines 7-30 and lines 57-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of French with the teachings of Larson so as to have a temporary and permanent storage for stream of data. The motivation being to have a storage devices for data stream for easing free space of

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memory and for easing increasing linear values in the vertical partitioning to store data in a column-wise basis.

With respect to claim 2, French teaches partitioning each column into groups of values based on a primary key for the table data (see figs 3B-3C and 4B; col. 14, lines 1-14) and formatting each group of values into a data stream (col. 4, lines 15-18).

With respect to claim 3, French discloses wherein formatting each column comprises compressing the values in the column (col. 3, lines 42-47 and col. 4, lines 8-27).

With respect to claim 4, French discloses creating a code for each value in the column and replacing each value with the corresponding code (code generator: col. 7, lines 56-67 and col. 8, lines 1-14).

With respect to claim 5, French discloses creating a plurality of entries, one entry for each value in the column; and deriving the code from a location for the corresponding entry within the plurality of entries (col. 23, lines 18-48 and lines 64-67 and col. 24, lines 1-50).

With respect to claim 6, French discloses determining a number of occurrences of each value in the column; and deriving the code for each value from the corresponding number of occurrences (Group-By clause: col. 3, lines 25-37 and col. 11, lines 1-15).

With respect to claim 7, French discloses creating a plurality of entries, one entry for each value in the column, storing a number of occurrences of each value in the

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column in the corresponding entry and deriving the code for each value from the corresponding number of occurrences (col. 3, lines 25-37 and col. 11, lines 1-15).

With respect to claim 8, French discloses directing the storage device to store the plurality of entries in conjunction with the corresponding continuous strip of data (stream of data in data page being contiguous format: col. 4, lines 8-18; also see col. 9, lines 56-67 and col. 10, lines 1-11).

With respect to claim 9, French discloses directing the storage device to store the plurality of entries in a header for the corresponding continuous strip of data (page header: col. 12, lines 62-67 and col. 13, lines 1-10).

With respect to claim 10, French discloses encoding the codes in the column according to an encoding table (compression technique is applied to all columns of data in the table: col. 4, lines 18-26).

With respect to claim 11, French discloses formatting multiple columns into a single data stream (columns of data are storing data in a column-wise basis on the data page: col. 12, lines 37-50; also see abstract).

With respect to claim 12, French discloses linearly concatenating a series of rows, each row comprising one value from each of the multiple columns (columns of data are contained in data pages, see fig. 3C: col. 13, lines 26-38; also see col. 11, lines 2-15).

With respect to claim 13, French discloses linearly concatenating the multiple columns (col. 11, lines 2-15).

Claim 14 is essentially the same as claim 1 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 1 hereinabove.

Claim 15 is essentially the same as claim 2 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 16 is essentially the same as claim 3 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 17 is essentially the same as claim 4 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 18 is essentially the same as claim 5 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 5 hereinabove.

Claim 19 is essentially the same as claim 6 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 6 hereinabove.

Claim 20 is essentially the same as claim 7 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

Claim 21 is essentially the same as claim 8 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 22 is essentially the same as claim 9 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 23 is essentially the same as claim 10 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

Claim 24 is essentially the same as claim 11 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 25 is essentially the same as claim 12 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

Claim 26 is essentially the same as claim 13 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

Claim 27 is essentially the same as claim 1 except that it is directed to a computer system rather than a method (see fig. 1A of the computer system 100, system bus, storage device and cache memory: col. 5, lines 28-46), and is rejected for the same reason as applied to the claim 1 hereinabove.



Claim 28 is essentially the same as claim 2 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 29 is essentially the same as claim 3 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 30 is essentially the same as claim 4 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 31 is essentially the same as claim 5 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 5 hereinabove.

Claim 32 is essentially the same as claim 6 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 6 hereinabove.

Claim 33 is essentially the same as claim 7 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

Claim 34 is essentially the same as claim 8 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 35 is essentially the same as claim 9 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 36 is essentially the same as claim 10 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

Claim 37 is essentially the same as claim 11 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 38 is essentially the same as claim 12 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

Claim 39 is essentially the same as claim 13 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

Claim 40 is essentially the same as claim 1 except that it is directed to a data storing system rather than a method (client computer as computer nodes in the client/server computer networked system: see abstract, and col. 6, lines 2-17 and see fig. 1A of the computer system 100, system bus, storage device and cache memory: col. 5, lines 28-46), and is rejected for the same reason as applied to the claim 1 hereinabove.

Claim 41 is essentially the same as claim 2 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 42 is essentially the same as claim 3 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 43 is essentially the same as claim 4 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 44 is essentially the same as claim 7 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

Claim 45 is essentially the same as claim 8 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 46 is essentially the same as claim 9 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 47 is essentially the same as claim 10 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

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Claim 48 is essentially the same as claim 11 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 49 is essentially the same as claim 12 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

Claim 50 is essentially the same as claim 13 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

6. Claims 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent NO. 5,794,229 issued to French et al. (hereinafter French).

With respect to claim 51, French discloses wherein one of the plurality of compute nodes acts as a master to receive the table data from the data source and to transfer the table data and instructions for storing the table data to the other compute nodes (col. 7, lines 17-35 and col. 10, lines 41-62, see figs. 4A-4D the boundary of storage is never to reach: col. 13, lines 40-55).

French teaches storing data vertically as by column. Each column is as a continuous data, storing data in column-wise basis. The system includes compression data (see abstract). Date or record of data stream is stored in a database as a persistent storage. French does not explicitly teach continuous strip of data in a

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temporary storage and permanent storage. French does not clearly teaches the limit of the storage without regard to a page size for storage.

However, French teaches the compression data and the size of storage from which the limit of size never to be reached (see col. 13, lines 40-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of French with the teachings of Larson so as to have storage to hold all the data record. The motivation being to have a storage devices for data stream for easing free space of memory and for easing increasing linear values in the vertical partitioning to store data in a column-wise basis.

With respect to claim 52, French discloses a header field containing data representing an identifier for a column of values from a table; and a plurality of data fields containing data representing the values in the column identified by the header field, the plurality of data fields forming a continuous stream of compressed data for storing across page boundaries (client computer nodes are receiving data from one or more database tables: col. 6, lines 56-67; see fig. 1A and fig. 1B, col. 5, lines 28-57: transferring data from storage to memory and the data source is data pages; see figs. 3A-3C, page header: col. 12, lines 62-67; and the columns of data are stored in data pages, which forms a single page chain and each data page includes a page pointer for referencing the next data page the page chain: col. 13, lines 3-38; also see abstract lines 12-13, col. 3, lines 60-64 and col. 4, lines 2-18; see figs. 4A-4D the boundary of storage is never to reach: col. 13, lines 40-55).

With respect to claim 53, French discloses a plurality of dictionary entries containing data representing each value in the column and data representing a count of the occurrences of the corresponding value in the column identified by the header field, wherein the data in the plurality of data fields are codes derived from the counts of the occurrences of the corresponding values (see figs. 3A-3C, page header: col. 12, lines 62-67; and the columns of data are stored in data pages, which forms a single page chain and each data page includes a page pointer for referencing the next data page the page chain: col. 13, lines 3-38; also see abstract and col. 3, lines 25-37 and col. 11, lines 1-15).

With respect to claim 54, French discloses wherein the header field further contains data representing the plurality of dictionary entries (col. 12, lines 62-67).

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Contact Information**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ly whose telephone number is 703 306-4527 or via E-Mail: ANH.LY@USPTO.GOV. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene, can be reached on 703 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703 746-7239.

Any response to this action should be mailed to:


Commissioner of Patents and Trademarks


Washington, D.C. 20231

or faxed to: Central Fax Center (703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-6606 or 703 305-3900.

ANH LY   
JUN 24<sup>th</sup>, 2004

  
JEAN M. CORRIELUS  
PRIMARY EXAMINER